

Pericardial Diseases

The questions signed by * are hard: read their explanation. ● Past Years ● TBL ● Others

This file belongs to the PULSE Cardiology question book: the explanations of the multiple choice answers and the model answers of the essay questions, in the words of the handout.

Answer Key | Multiple Choice Questions

Question no.	1	2	3	4	5	6	7	8	9	10	11	12
Answer	d	d	c	d	c	c	b	b	a	b	c	c

Question no.	13	14	15	16	17
Answer	a	d	d	b	b

► Second | Questions with a Note

Question no.	1
Answer	c

► Why this answer?

- All are causes of hemorrhagic pericardial effusion except:*

(d) Heart failure

Haemorrhagic pericarditis occurs in malignant infiltration, uraemia, myocardial infarction and T.B.. Right-sided heart failure causes hydropericardium, an accumulation of transudate.
- All are signs of pericardial tamponade except:*

(d) Pulmonary crepitations

Signs of tamponade include signs of low COP, pulsus paradoxus, congested neck veins and weak distant heart sounds. Pulmonary crepitations are not among them; the chest x-ray shows pulmonary oligoemia.
- Beck's triad is seen in:*

(c) Cardiac tamponade

Cardiac tamponade is the severest form of pericardial effusion, with decreased Bl. Pr. + elevated JVP + muffled heart sounds = Beck's triad.
- All are true about pain of pericarditis except:*

(d) Relieved by lying down, inspiration, cough, swallowing, or...

Pericarditis pain is increased by breathing, rotation of the trunk and lying flat, and decreased by sitting forwards, so (d) is false. Its character is severe, stitching, and it may be referred to the shoulders.
- Which of the following is the most important physical finding when diagnosing acute pericarditis?*

(c) A precordial friction rub.

The pericardial rub is the sign of dry pericarditis: gritty, usually over the bare area and base, and not affected by respiration. Decreased Bl. Pr. belongs to cardiac tamponade.

- 6 Ewart's sign is seen in:
(c) Pericardial effusion.
Ewart's sign is dullness over the left subscapular region due to compression of the base of the left lung by pericardial fluid, a sign of pericardial effusion.
- 7 The hallmark of benign idiopathic pericardial effusion in ECHO is:
(b) A clear ECHO-free space.
Simple fluid shows as a clear echo-free space around the heart; masses, strands, solid parts or a thick pericardium suggest a malignant, purulent or tuberculous effusion. Echo is the most sensitive test for diagnosis of pericardial effusion.
- 8 Beck's triad consists of the following except:
(b) Prominent apical pulsation
Beck's triad is decreased Bl. Pr. + elevated JVP + muffled heart sounds. In effusion the apical pulsations are weak or absent, not prominent.
- 9 Constrictive pericarditis is characterized by all of the following except:
(a) Big pulse volume - Pulsus alternans
Constrictive pericarditis gives signs of low COP and pulsus paradoxus, so a big pulse with pulsus alternans is false. Systemic venous congestion (raised JVP, enlarged liver, ascites praecox) and the pericardial knock are present.
- 10 Beck's triad consists of the following except:
(b) Basal back crepitations
Beck's triad is decreased Bl. Pr. + elevated JVP + muffled heart sounds. Basal crepitations are not part of it; the chest x-ray of effusion shows pulmonary oligoemia.
- 11 Which of the following drugs is not indicated in treatment of idiopathic acute pericarditis?
(c) Phenytoin
Treatment of pericarditis is treatment of the cause and anti-inflammatory drugs e.g. indomethacin, aspirin, ibuprofen; intractable causes may require steroids or colchicine. Phenytoin is not one of them.
- 12 In cardiac tamponade Beck's triad consists of all the following except:
(c) Pulsus paradoxus
Beck's triad is decreased Bl. Pr. + elevated JVP + muffled heart sounds. Pulsus paradoxus is a general sign of tamponade but not part of the triad.
- 13 The commonest cause of pericarditis is:
(a) Post-viral
The commonest causes of pericarditis are idiopathic (mostly viral), tuberculous, rheumatic and uraemic, and idiopathic is probably viral.
- 14 A 60-year-old man presented with dyspnea, anxiety and retrosternal heaviness. His blood pressure is 80/50...
(d) Pericardiocentesis
Decreased Bl. Pr., congested neck veins and distant heart sounds with pericardial fluid are cardiac tamponade. Pericardial aspiration is used for treatment of cardiac tamponade, and there is no place for digoxin.
- 15 * Pulsus paradoxus is seen in all except:
(d) Dilated cardiomyopathy
Pulsus paradoxus is a sign of tamponade and constrictive pericarditis, and it also occurs in acute severe asthma. Dilated cardiomyopathy is the exception, inferred from the line "Rt. sided heart failure: no pulsus paradoxus".
- 16 * Kussmaul's sign is present in:
(b) Right ventricular infarction
Kussmaul's sign is due to failure of the right side of the heart to accept the increased venous return during inspiration. Right ventricular infarction is inferred from this line, as the infarcted right ventricle fails in the same way.

17 * Dressler's syndrome results from:

(b) Autoimmune reaction

Dressler's (post-infarction) syndrome is listed among the causes of pericarditis after myocardial infarction and, being intractable, may require steroids or colchicine. Its autoimmune nature is inferred from this need for anti-inflammatory treatment.

► **Second | Questions with a Note: why this answer?**

1 Constrictive pericarditis is characterized by all of the following except:

(c) JVP is normal

In constrictive pericarditis the neck veins are congested and pulsating and rise further on inspiration, so a normal JVP is the false statement. The small pulse volume, the large liver with early ascites, and the pericardial knock at the left sternal border are all features of constriction.

Model Answers | Essay Questions

1 Enumerate Light criteria for diagnosis of exudative pericardial effusion.

Features of exudate and transudate effusions

	Transudate	Exudate
Proteins	< 3 gm%	> 3 gm%
Sp. gravity	< 1016	> 1016
LDH	< 200 IU/L	> 200 IU/L
Cells (WBCs)	< 1000/cmm	> 1000/cmm

* Stains & cultures including that for T.B. & fungi should be done & examine for malignant cells.

Note The handout does not name Light's criteria; it gives these as the features of an exudate.

2 Mention clinical picture (symptoms and signs) of pericardial effusion.

1. Symptoms

- * Symptoms of systemic congestion.
- * Symptoms of low COP.
- * **Precordial pain:** dull aching pain due to stretch of the parietal pericardium and may be referred to the shoulders.
- * **Pressure symptoms:** may occur with massive effusion.
 - Dyspnea improved by sitting and leaning forwards [Mohammedan prayer's position].
 - Cough and dysphagia (rare).
- * Symptoms of the cause e.g. T.B. toxemia.

2. General signs (signs of cardiac tamponade)

- * Decubitus: may be Mohammedan prayer's position.
- * Signs of low COP.
- * **Pulsus paradoxus:**
 - It is decreased pulse volume during inspiration [due to decrease systolic Bl. Pr. > 10 mmHg].
 - It can be detected by palpation (esp. of the femoral or carotid artery), or by using the sphygmomanometer.
 - Normally, during inspiration the lungs expand and accommodate more amount of blood. This amount is compensated by increased venous return to the right side, so venous return to the left side of the heart remains constant "nearly constant".
 - Pulsus paradoxus is due to decrease of venous return to the left side of the heart because the expansion in the lungs during inspiration isn't compensated by increase of the right ventricular stroke volume.

* **Signs of systemic venous congestion:**

- Neck veins:
 - Congested pulsating neck veins.
 - May be severely congested with minimal pulsations giving a false impression of non-pulsating veins.
 - **Kussmaul's sign** [inspiratory filling]: due to failure of the right side of the heart to accept the increased venous return during inspiration with accumulation of blood in the veins.
 - **Friedreich's sign** [diastolic collapse]: deep Y descent due to rapid emptying of the congested neck veins in a short time after opening of the tricuspid valve [less marked than in constrictive pericarditis]; N.B. y descent may be blunted in tamponade.
 - **Gibson's sign**: deep X descent.
- Enlarged tender liver.
- Ascites which may precede oedema of LL (ascites praecox).

* Signs of the cause.

3. Cardiac signs

Examination	Findings
Inspection and palpation	The apical pulsations are weak or absent; there may be precordial bulge in children.
Percussion	Dullness outside the apex; shifting dullness over the pulmonary area; increased size of the bare area with stony dullness; dullness to the right border of the sternum; Ewart's sign : dullness over the left subscapular region due to compression of the base of the left lung by pericardial fluid.
Auscultation	Weak distant heart sounds.

3 Classify the type of this patient's chest pain.

Non-anginal chest pain.

Anginal chest pain

- * Constricting / heavy discomfort to the chest, jaw, neck, shoulders, or arms.
- * Symptoms brought on by exertion, emotion, cold weather and heavy meals.
- * Symptoms relieved within 5 min by rest or nitro-glycerine (GTN).

Number of features	Type of chest pain
All the 3 features	Typical angina
Only 2 features	Atypical angina
0-1 feature	Non-anginal chest pain

Features that make angina less likely

- * Pain that is continuous or lasting for seconds is less likely relates to ischemic origin.
- * **Pleuritic localized chest pain** or that worse with swallowing is mostly non-ischemic pain.

4 What is the most likely diagnosis?

Dry pericarditis.

Pain

Feature	Description
Site and radiation	Retrosternal or precordial pain "may be referred to the upper abd. (along the intercostal nerves) and shoulders (along the phrenic nerves)".
Character	Severe, stitching.
Decreased by	Sitting forwards.
Increased by	Breathing , rotation of the trunk, lying flat (but not related to exertion).
Pleuritic pain	May occur due to associated pleurisy.

ECG

- * **Raised S-T segment (concave upwards) in all ECG leads.**
- * May be inverted or flat T wave.

5 Describe causes of this type of cardiac chest pain.

Cardiac pain

- * **Pericardial disease:** dry pericarditis; massive pericardial effusion.
- * Massive pulmonary embolism and pulmonary infarction.
- * Aortic dissection and aortic aneurysm.
- * Cardiac neurosis:
 - Occurs in neurotic individuals.
 - Site: left inframammary and localized.
 - Radiation: no specific radiation (may be to left arm).
 - Character: stitching or stabbing.
 - No relation to exertion and no relief by rest.
 - Variable duration (seconds or hours).
 - Associated with local tenderness and may be other features of neurosis.
 - Normal cardiac exam.
- * Huge cardiomegaly: may rarely cause retrosternal heaviness.
 - N.B. Huge left atrium: sawing pain "erosion of spine".
- * Mitral valve prolapse, AS, AR.

Note The handout gives one list of causes of cardiac pain; it does not separate non-ischaemic causes (ischaemic heart disease left out here).